

**Document #568 Weisheit, John Living Rivers and Colorado Riverkeeper**

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February 18, 2005

Mr. Don Metzler  
Moab Federal Project Director  
U.S. Department of Energy  
2597 B 3/4 Road  
Grand Junction, CO 81503

Sent Via Fax: 970-248-7636

Re: Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah,  
Draft Environmental Impact Statement (DOE/EIS-0355D).

Dear Mr. Metzler,

Living Rivers, Colorado Riverkeeper, Colorado Plateau River Guides, River Runners for Wilderness and Colorado Outward Bound West submit the following comments concerned with the Draft Environmental Impact Statement (DEIS) for the Moab Uranium Mill Tailings. Collectively our mission statements promote protection of the natural and cultural heritage of rivers. We would like to thank the Department of Energy (DOE) for their efforts to prepare this DEIS for public review and appreciate this opportunity to participate.

**1. Summary**

It is our position that the Moab Mill's tailings pile be moved by the existing railroad to an off-site disposal area in the Mancos shale deposits north of Moab. We agree with the Environmental Protection Agency that the Off-Site Disposal Alternative at Crescent Junction is superior to the disposal alternative at Klondike Flats. The site at Crescent Junction is more isolated from human activity, has a thicker deposit of shale and is more protected from the agents of erosion.

It is also our position that the ground water pollution from the Moab Mill site should be remediated to successfully remove all jeopardy to the threatened and endangered species of the Colorado River downstream, including the wetlands of the Moab Sloughs. We are convinced that this can not be accomplished by leaving the pile capped on-site and adjacent to the Colorado River.

Our position also includes moving the pile off-site to eliminate future risks to human health for residents of developed areas along the Colorado River downstream, and to the visitors of federally protected public lands downstream. These public lands include the national parks at Canyonlands and Grand Canyon, the national recreation areas at Glen Canyon and Lake Mead, and the wildlife refuges of the Lower Colorado River Complex. This also includes the water users identified by the Colorado River Compact, specifically Arizona, Nevada, California and the Republic of Mexico.

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It is also our position that the White Mesa Mill Alternative in San Juan County should be abandoned for the reasons stated by the Ute Nation from the White Mesa Reservation, as presented to the DOE at the public meeting held there on January 27, 2005. This alternative will affect the Ute Nation's quality of life and their values concerning the protection of their culture heritage and their sacred sites.

The DOE must also acknowledge the official position of the City Council of Moab and Grand County Council, which have identified the Off-Site Disposal Alternatives at either Klondike or Crescent Junction as superior. This alternative will meet the objectives and goals of the local citizens in order to remove them from environmental and social harm.

The members of our organizations that live in Grand County strongly object to moving the toxic contents of the Moab Mill site to any other county in Utah. This is a Grand County problem and the impacts from these toxic materials should not be passed on to our neighbors in San Juan County.

**2. The DOE is unsuccessful in removing doubt concerning the compromise of the On-Site Disposal Alternative during a probable maximum flood**

We are convinced that the tailings pile at the Moab Mill must be moved away from the Colorado River because the suggested reasons identified with the On-Site Disposal Alternative in the DEIS are, at best, speculative.

- a. The Moab Mill site was originally chosen for reasons of convenience and not for reasons of providing long-term environmental protection from the consequences of historic flooding along the Colorado River.
- b. The federal government has already moved uranium waste piles away from the floodplains of the Colorado River and its tributaries and it is reasonable to expect the federal government to remain consistent with this precedent.
- c. Independent scientists have demonstrated that it is reasonable to suggest that Colorado River flooding may compromise the Moab Mill's tailings pile during a probable maximum flood in the next 200 to 1000 years. That ground water remediation may not be geologically feasible with the pile capped in place. These scientists are associated with the National Academy of Sciences, U.S. Geological Survey and academics from the state universities at Salt Lake City and Tucson.
- d. The Bureau of Reclamation manages high dams, both concrete and earthen, on the Gunnison and Dolores rivers. These dams will likely be decommissioned in the next 200 to 1000 years. At some point in this time-period these dams will no longer provide flood control for the downstream environment. It is also possible that, as these dams age and fill with sediment, the spillway mechanisms will experience flood flows greater than the original design specifications, which could result in a possible catastrophic breach that could subsequently compromise a tailings pile capped in place at Moab Valley.
- e. The threat of flooding that could compromise the On-Site Disposal Alternative is significant when considering the intent behind the legislation for protection of downstream resources. This legislation includes the National Park Service Organic Act,

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the National Historic Preservation Act, the Clean Water Act, the Rivers and Harbors Act and the Endangered Species Act. This would also include Executive Orders such as #11990 (wetlands protection) and #13007 (sacred sites).

**3. The DOE must ensure consultation with the work performed by the University of Utah at Salt Lake City and the University of Arizona at Tucson**

We request that all findings from Mr. Phil Gardner and Mr. Kip Solomon, at the University of Utah at Salt Lake City, be included as a part of the public record for the Final Environmental Impact Statement (FEIS). These studies indicate that ground water remediation at the Moab Mill site would best be served by moving the pile from the river.

We also request that all findings, pending the completion of work now being performed by Mr. John Dohrenwend and Mr. Victor Baker from the University of Arizona at Tucson, be considered as part of the public record for consideration by the FEIS. These studies will concern itself with the effects of a probable maximum flood at the Moab Mill site and would serve as a valuable exercise in the peer-review process of DOE's contractor-based science and engineering reports that are deemed speculative.

We would also request that the work already completed by Mr. Dohrenwend be submitted as part of the public record for the FEIS. Mr. Dohrenwend's reports were recently published in the *Times-Independent*, the weekly paper of Grand County. By using existing photographic evidence from over-flight and satellite imagery, Mr. Dohrenwend has demonstrated that the findings of the DOE contractors concerning river migration are speculative and that a reasonable doubt does exist to conclude that the Moab Mill site could be compromised by a probable maximum flood.

**4. The DOE must ensure consultation with applicable federal agencies**

The DEIS is not thorough because consultation with the Bureau of Reclamation (Bureau) was not sought in an official capacity. This is an oversight on the part of the DOE that must be corrected. The Bureau is the federal regulatory agency that has jurisdiction over water quality for the Colorado River. The Bureau is also a partner in the Upper Colorado River Endangered Fish Recovery Program and the Lower Colorado River Multi-Species Conservation Program. The Bureau has already produced publications analyzing and modeling a probable maximum flood in the Colorado River drainage and their expertise in this regard should be fully considered.

Some of the dams that the Bureau has designed have had engineering components that have become problematic. Some Bureau dams have failed entirely, such as Teton Dam. The Colorado River basin dams that have had design problems include Fontenelle, Flaming Gorge, Navajo, Glen Canyon and Hoover. The problems include seepage erosion at the earthen dams and river outlet and spillway failures at the concrete dams.

Living Rivers brought this oversight to the attention of the Bureau of Reclamation at Salt Lake City on January 27, 2005. We formally ask DOE that consultation with the Bureau is initiated and that their comments be included in the FEIS.

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We also remind DOE that a full consultation with the U.S. Fish and Wildlife Service (USFWS) concerning the Endangered Species Act is required for the FEIS. This would include the reasonable and prudent alternatives of USFWS's Biological Opinion.

We also request consultation with the U.S. Geological Survey in the FEIS concerning this agency's recent analysis and modeling of a probable maximum flood in the Moab Valley; *Report 2005-5022* became publicly available on February 11, 2005.

We also request that the State Department should be allowed to weigh in on FEIS concerning U.S. treaty obligations with the Republic of Mexico, and because the Colorado River delta has been designated as an International Biosphere Reserve.

#### **IV. Global warming and climate change**

The DOE sponsored the Accelerated Climate Prediction Initiative (Initiative), which was administered by the Pacific Northwest National Laboratory. Much of the consequent analysis and modeling from this Initiative has been recently published and would be useful in the consideration of alternatives for the Moab Mill's tailings pile. We request the DOE consult with the principle scientists of the Initiative for the FEIS concerning the effects of climate change on the Colorado River. The report of the Initiative acknowledges that extreme variables of climate are likely to occur and due to the impacts of increasing greenhouse gases in the atmosphere. Examples of impacts from climate change would include reduced water quality as a result of diminished flows, increased sediment loads, channel narrowing of the river, and catastrophic flooding in local and regional watersheds.

#### **V. Cost analysis**

Human health, national parks, endangered species and cultural heritage are priceless things. We will support the DOE to save taxpayer money so that the savings could be applied to other worthwhile service projects to protect the general health and welfare of the American people. However, because it is reasonable to assume that the On-Site Disposal Alternative may fail and that subsequent clean-up costs would be astronomical, the On-Site Alternative should be abandoned for reasons that it would potentially save taxpayer's money in the long-term. The Off-Site Disposal Alternative, though more expensive, provides greater economic and environmental security. The additional cost is therefore justified and potentially serves to be the most affordable alternative in the DEIS.

#### **VI. The river community**

People depend on the Colorado River for economic security and for the enrichment of their lives through visitation at Canyonlands National Park and Glen Canyon National Recreation Area. Living Rivers, Colorado Riverkeeper, Colorado Plateau River Guides, River Runners for Wilderness and Colorado Outward Bound West represent various parts of a constituency we call the river community. The intent of this community is to partake in the organizing and participation of river trips through Canyonlands National Park and Glen Canyon NRA. The reasons include recreation, employment, education in the sciences and arts, and the monitoring of the Colorado River's environmental quality and cultural heritage.

*Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah  
Final Environmental Impact Statement*

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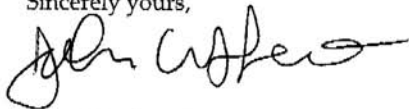
The professional river guides represent the day-to-day users of the Colorado River. Over 300 active professional river guides have hundreds of multiple-day river trips and thousands of one-day trips that have spanned a career, for some, as long as 40 years. Their clients (numbering in the thousands annually) include the general public, special populations, and educational and cultural institutions. Another large constituency of the Colorado River users that are represented by the thousands are the non-commercial river runners who come to enjoy the benefits of Canyonlands National Park for the same reasons as stated above, which includes employment through incidental support services.

The On-Site Disposal Alternative must be abandoned for the reasons that this river community would suffer economic and social hardships should the Moab Mill's tailings pile fail in a probable maximum flood with the eventual outcome of irradiating the river corridor of Canyonlands National Park and Glen Canyon NRA. This could also affect the river community of Grand Canyon National Park and Lake Mead NRA.

In conclusion the risk to the downstream ecosystems and the health of millions of people is much too high to justify keeping the Moab Mill site along the shores of the Colorado River. The principle objective of the Final EIS must be the safe removal of the pile from the Colorado River, to stop the groundwater contamination of the Colorado River and the Moab Sloughs, and to contain these toxic materials at an off-site location in a responsible and efficient manner.

Thank you again for this opportunity to provide comments. Please do not hesitate to contact us should you require assistance in regard to this letter.

Sincerely yours,



John Weisheit, Conservation Director  
Living Rivers and Colorado Riverkeeper

On behalf of the following groups:

Colorado Plateau River Guides  
PO Box 344  
Moab, UT 84532

River Runners for Wilderness  
PO Box 17301  
Boulder, CO 80308

Colorado Outward Bound West  
PO Box M  
Moab, UT 84532

**Document #572 Indergard, RG Lantz M. Individual**

**Kym Bevan**

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**From:** lindergard@frontiernet.net  
**Sent:** Friday, February 18, 2005 2:09 PM  
**To:** moabcomments  
**Subject:** DEIS Comments

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Comments.doc

Hello All: Please find comments to DEIS attached. Thank you.

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**To:** U.S. Department of Energy Grand Junction  
2597 B<sup>3</sup>/<sub>4</sub> Road, Grand Junction, CO 81503

**From:** Lantz M Indergard RG  
P.O. Box 443  
Moab, Utah 84532

**Re:** Comments  
Moab Uranium Mill Tailings  
Grand and San Juan Counties, Utah  
Draft Environmental Impact Statement (EIS)

## General Statement

The tailings pile is here to stay. That is the physical and fiscal reality of the present time. Floods may come just like tsunamis. We cannot control this. It's time to get over it, and fix what is fixable. We may not be able to move the pile, but we can mitigate the present source of ground water and surface water contamination. The objective of my comments is to re-focus the DOE on source area remediation, and solicit a technical response.

In general, the DOE needs to demonstrate more innovation with regard to the consideration, testing, and design of groundwater remediation alternatives at the site. The *EIS* focuses on an outdated pump & treat (P&T) alternative that largely ignores the environmental industry's modern, source area-focused, in-situ alternatives. The alternative identified in the *EIS* is designed to treat the symptom, and not the cause of groundwater contamination. The estimated time for cleanup (>70 yrs) corroborates this, and subtly qualifies the site for continued, long-term abuse of tax dollars.

Lack of innovation aside, a wasteful amount of characterization work has been conducted to date. This work has **not** been focused on the remedy. As a result, the DOE is planning to implement a long-term, expensive, and outdated technical approach.

## Comments and Questions

1. The DOE has experience with in-situ reductive zone (IRZ) processes, including permanent reactive barriers (PRB). However, only limited references to these processes are included in either the *EIS* (DOE 2004) or *Site Observational Work Plan* (DOE 2003). Discussion or consideration of these processes is not expanded

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in any of the documents. Modern IRZ processes are not limited to the robust, yet depth-limited and expensive PRB. In addition, these processes are not prone to plugging issues, such as experienced at the Monticello site. The DOE should consider modern IRZ processes, both biological and abiotic, as an alternative, or as a supplement to the planned P&T alternative.

2. The P&T alternative is forecasted to remediate groundwater in 75 years with off-site disposal and 80 years with on-site disposal. Making this statement diminishes the value of moving the pile, (particularly the political value), and further diminishes the efficacy of P&T. In addition, a 75-80 year cleanup period suddenly makes the 100-yr flood appear more threatening.
3. Oxidizing conditions in combination with microbiological activity are believed to exist beneath the tailings pile and within the aquifer in general. Under these conditions, ammonia species react to form nitrite, nitrate, or nitrogen gas (EIS 2003). This condition is corroborated by the chemically reducing conditions measured in wells located in contaminated areas. Given this condition, and the availability of modern IRZ techniques to enhance this condition, why have in-situ pilot studies **not** been conducted? Giving this equilibrium a little "push" may literally take decades off of the cleanup time, and will diffuse the concerns of so many stakeholders regarding pollution of the Colorado River.
4. The vertically stratified, saline groundwater, and hydraulically conductive aquifer provides a unique remedial opportunity. The higher salinity (more dense) groundwater pumped from the deeper aquifer should be tested as an IRZ reagent delivery mechanism. Groundwater containing 80,000 total dissolved solids (TDS) will sink vertically if injected into 20,000 TDS groundwater due to the density contrast. This is why the deep groundwater is more saline at the site. It is a density-driven equilibrium. A simple simulation of the vertical fate of 80k TDS groundwater injected into 20k TDS groundwater can be easily, and inexpensively conducted using the Sandia Waste Isolation Flow and Transport (SWIFT) model. Even at 20:1 vertical anisotropy, it will sink. Rather than worrying about groundwater "upconing", pilot studies should be conducted to quantify the fate. The resistivity contrast between the two waters is great enough that it should be measurable using conventional cross-well tomography or a *mise a la masse* technique. Assuming the results of this testing demonstrates a vertical fate, pilot testing should be conducted to determine the fate of various IRZ reagents. The results should be used for IRZ remedial design, and to diffuse the "upconing" concern.
5. The toe of the tailings pile is over 2,000 feet wide, yet the groundwater contamination is much less laterally extensive. Conventional IRZ pilot studies should be conducted in the "hot" areas. The pilot studies should include both carbohydrate-type and nano-scale zero valent iron reagents to test both the biological and abiotic response. If the results are positive, the lateral and vertical (spatial) extent of the induced reducing conditions should be investigated. The



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current limitation of conventional IRZ alternatives (non-PRB) is the lateral extent of effectiveness. "Lateral extent" is something which no contractor (other than GeoSierra) appears willing, or able to measure. Assuming pilot studies demonstrate that the site is appropriate for IRZ development, a laterally extensive delivery mechanism, including, but not limited to horizontal wells should be considered. This mechanism appears particularly viable with regard to the availability of saline groundwater. Dense (saline) groundwater injected horizontally into the surface aquifer will sink. Ostensibly, the result will be a **vertically and laterally extensive IRZ**. The challenge of this approach is in the application, not the science.

6. The design and costs associated with the planned P&T approach should be reconsidered in light of the site-specific IRZ remedial opportunity. The evaluation should consider the potential reduction of cleanup time.

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## **References**

DOE (U.S. Department of Energy), 2004. Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Draft Environmental Impact Statement (DOE/EIS-0355D). November

DOE (U.S. Department of Energy), 2003. *Site Observational Work Plan for the Moab, Utah, Site*, GJO-2003-424-TAC, U.S. Department of Energy, Grand Junction, Colorado, December.

**Document #573 Fong, P.E., Leighton      Glendale Water & Power**

**From:** Fong, Leighton [LFong@ci.glendale.ca.us]

**Sent:** Friday, February 18, 2005 10:45 AM

**To:** moabcomments

**Cc:** Kavounas, Peter

**Subject:** Moab EIS Comments

Mr. Don Metzler

Moab Federal Project Director

U.S. Department of Energy

2597 B 3/4 Road

Grand Junction, CO 81503

Dear Mr. Metzler,

The City of Glendale, California, has a population of just over 200,000 and receives about 24,000 acre-feet (over 70%) of our annual water supply from the Metropolitan Water District of Southern California. The threat of the Moab uranium mill tailings to the quality of our water supply from the Colorado River is of considerable concern to our City.

Glendale suffered greatly when our groundwater was lost due to VOC contamination. It took almost two decades and significant expense to restore that water supply with the construction of the Glendale Operable Unit. Considerable resources will continue to be expended in the operation of treatment facilities for decades to come. We have learned the hard way that Ben Franklin knew water quality when he said an ounce of prevention is worth a pound of cure.

We can appreciate that moving the tailings will be a difficult task. However it would not compare to the efforts of remedial treatment if our water supply became contaminated from these tailings.

Thank you for your consideration.

Leighton Fong, P.E.

Water Quality Manager

Glendale Water and Power

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